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DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL PROTECTION

333 W. Nye Lane, Room 138
Carson City, Nevada 89706

August 28, 2001

Mr. Douglas Bonham
Supervisory, Environmental Engineer
Naval Air Station Fallon
4755 Pasture Road
Fallon, NV 89496-5000

Re: Draft Final - Assessment of Intrinsic Remediation at Installation Restoration Sites – March 2001 Naval Air Station Fallon Fallon, Nevada

Dear Mr. Bonham:

The Nevada Division of Environmental Protection, Bureau of Federal Facilities (NDEP-BFF) staff, has reviewed the subject report. NDEP has the following comments concerning this report.

Comment No. 1: Disclaimer: The reports disclaimer states that "nor does either (United States Government, Battelle) warrant or otherwise represent in any way the accuracy, adequacy, efficacy, or applicability." This disclaimer is unacceptable and must be revised to accurately reflect the extent that NDEP can rely on this document. As written, this document cannot be used to evaluate intrinsic remediation (IR) at NAS Fallon.

Comment No. 2: Volume I Sections 1.1 Purpose and Objective & 1.2 Approach: These sections provide an outline of the EPA criteria for the use of Intrinsic Remediation/Monitored Natural Attenuation (IR/MNA). However, they do not adequately provide the criteria that limit the use of IR/MNA. The following list of EPA limitations/requirements from "Use of Monitored Natural Attenuation at Superfund,

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RCRA Corrective Action, and Underground Storage Tank Sites – April 1999" should be incorporated into these sections.

- EPA does not view IR/MNA to be a "no action" or "walk-away" approach but rather considers it to be an alternative means of achieving remediation objectives that may be appropriate for specific, well-documented site circumstances where its use meets the applicable statutory and regulatory requirements.
- IR/MNA should be selected only where it meets all relevant remedy selection criteria, and where it will meet site remediation objectives within a time frame that is reasonable compared to that offered by other methods.
- These objectives (IR/MNA) include control of source materials, prevention of plume migration, and restoration of contaminated groundwaters, where appropriate.
- …decision makers need to ensure that IR/MNA is appropriate to address all contaminants that represent an actual or potential threat to human health or the environment.
- …IR/MNA alone is generally not sufficient to remediate petroleum release sites.
- The hydrologic and geochemical conditions favoring significant biodegradation of chlorinated solvents sufficient to achieve remediation objectives within a reasonable timeframe are anticipated to occur only in limited circumstances.
- EPA expects that reliance on IR/MNA, as the sole remedy will only be appropriate at relatively few contaminated sites.
- IR/MNA should not be considered a default or presumptive remedy at any contaminated site.
- EPA expects that IR/MNA will be most appropriate when used in conjunction with other remediation measures (e.g., source control, groundwater extraction), or as a follow-up to active remediation measures that have already been implemented.
- An example of a situation where IR/MNA may be appropriate is a remedy that includes source control, a pump-and-treat system to mitigate the highly contaminated plume areas, and IR/MNA in the lower concentration portion of the plume.

Comment No. 3, Volume I Section 3.0 to 3.6.2 Description of Installation Restoration Sites: These sections provide a brief outline of each of the six sites. Contained within each description is the definition of the Point of Compliance (POC) for each site. As discussed in our Comparison of Groundwater Alternative (CGA) Report response letter dated July 30, 2001, NDEP does not concur with the POC reference point (property boundary or drain). NDEP defines the POC as the leading edge of the groundwater plume. NDEP definition is supported by EPA IR/MNA objectives that include "control of source materials" and "prevention of plume migration."

Comment No. 4, Volume II Section 1.0 Introduction: This section describes the process of the three lines of evidence for IR. The report states that Site 1 and 14 first two lines of evidence (Historical Monitoring & Geochemical and Hydrologic data) were inconclusive that the key contaminants at these sites were actually undergoing in situ biodegradation. This section also states that modeling was conducted on sites where "contaminate plumes are expanding, and thus where there is a potential for contaminants to migrate". Volume III states that modeling was conducted on all sites but Site 2 and 16 indicating that the contaminate plumes at Site 1, 3, 6, and 14 had the potential to or are currently migrating (expanding).

Comment No. 5, Volume II Section 3.3 Analysis of Historical Monitoring Data (Site 1): This section describes the results of historic data review for Site 1. The data indicates that the majority of the solvent chemicals are stable; however, the PCE and 1,1-DCE plume centers of mass are migrating down gradient. Migration of these contaminates is not acceptable to NDEP nor in accordance with the EPA IR/MNA requirements for Contaminants of Concern (COC's).

Comment No. 6, Volume II Section 4.0 to 4.3 Assessment of Field and Laboratory Data for Site 2: Based on the information presented, the data for the site indicates that IR is proceeding at a rate that should address the limited dissolved phase groundwater plume in a reasonable time frame. This section should state that the free product is being addressed under another program.

Comment No. 7, Volume II Section 5.0 to 5.3 Assessment of Field and Laboratory Data for Site 3: This section describes the results of historic data at Site 3. The data suggests that the TCE plume is migrating downgradient. Migration of contaminates is not acceptable to NDEP nor in accordance with the EPA monitored natural attenuation (MNA) requirements for COC's.

Comment No. 8, Volume II Section 6.0 to 6.3 Assessment of Field and Laboratory Data for Site 6: A review of the data indicates that the site could be separated into two different plumes (north & south). The southern plume is documented to have very low levels of primarily total petroleum hydrocarbons-diesel range (TPH- D). The northern plume has elevated levels of TPH-D, naphthalene and TMBs. The data indicates that the "conventional biogeochemical parameters provide little evidence for intrinsic biodegradation of the dissolved fuel hydrocarbons at the site" therefore IR/MNA alone may not meet NDEP's cleanup requirements.

Comment No. 9, Volume II Section 7.0 to 7.3 Assessment of Field and Laboratory Data for Site 14:

Northern Plume: This section states that "strong evidence exist for intrinsic biodegradation." NDEP does not concur that "strong evidence" exists. The evidence indicates that the biodegradation present appears to be a very slow process and may only be occurring on the outer perimeter of the plume.

Southern Plume: The report stated, "In general, biogeochemical data presented on Figure 7-16 did not indicate that significant intrinsic biological activity is occurring in the area of contamination." NDEP concurs that there is little evidence of degradation of the COCs at this site.

Comment No. 10, Volume II Section 8.0 to 8.3 Assessment of Field and Laboratory Data for Site16: Based on the data presented, IR degradation is occurring at Site 16 and the groundwater plume is stable. The data also identifies numerous small solvent plumes within the larger plume that are required to be monitored for movement within the larger TPH-D plume.

Comment No. 11, Volume III Section 1.0 Purpose and Objectives of the Contaminant Fate and Transport Modeling: As stated previously, NDEP does not concur with the Navy's POC of "preventing COCs in groundwater from reaching the nearest downgradient receptor at unacceptable concentrations." Therefore, NDEP cannot accept the conclusions based on the Navy's POC. This section also indicates that Sites 1, 3, 6, and 14 were considered to be migrating or have the potential to migrate.

Comment No. 12, Volume III Section 3 through Section 6 – Assessment of Contaminant Fate and Transport for Sites 1, 3, 14, & 16: The modeling data indicate that limited/low rates of IR appear to be occurring at these sites. The data also indicate that it will take approximately 50 to 200 years to intrinsically remediate the groundwater at these sites. This degradation rate is not acceptable to NDEP and does not meet EPA's definition of "Reasonable Timeframe for Remediation." The modeling data also indicate that Sites 1, 3, and 6 will not reach the Navy's Point of Action (POA) assuming the biodegradation rate is constant or increases during the 50 plus years that it will take IR to obtain current MCLs.

Comment No. 13, Volume IV Section 2.0 – 2.3 Summary and Recommendations for Site 1- Old Crash Crew Fire Rescue Training Pit: NDEP does not concur with the recommendation for no "engineered remediation" for this site. Based on the Navy's evaluation of the site, the plumes will migrate 1,500 to 1,650 feet and require 65 to 120 years to degrade depending on the rate of biological activity at the site. This site does not meet EPA's IR/MNA definition for "Reasonable Timeframe for Remediation" or the plume boundary/zone migration recommendations. This site may meet EPA's typical site

expectation of requiring active remediation to address the hotspots/source control in conjunction with IR/MNA to address the outer low-level concentrations.

Comment No. 14, Volume IV Section 3.0 to 3.3 Summary and Recommendation for Site 2 – New Fuel Farm: Based on the data presented in the report and the nature of JP-5 historically released at the site, this site appears to meet the requirements for IR/MNA. This concurrence requires that the Navy continue to address the free product plume located at the site and submittal of a site-specific monitoring well location plan, well construction drawings, and graduated monitoring schedule for all COC's for a minimum period of 30 years.

Comment No. 15, Volume IV Section 4.0 to 4.3 – Summary and Recommendations for Site 3, - Hanger 1 Area: NDEP does not concur with the recommendation for IR/MNA at this site. This is based on the fact that the plume is migrating and "there is only minor intrinsic biological activity occurring at this site." This site may meet EPA's typical site expectation of requiring active remediation to address the hotspots/source control in conjunction with IR/MNA to address the outer low-level concentrations.

Comment No. 16, Volume IV Section 5.0 to 5.3 – Summary and Recommendations for Site 6 – Defuel Disposal Area: Due to the proximity of the release to the base boundary and the amount of source material remaining in the subsurface, NDEP does not concur with IR/MNA as a stand alone remediation for this site due to the volume of source material located adjacent to wells GT-1A and MW-57. . This site may meet EPA's typical site expectation of requiring active remediation to address the hotspots/source control in conjunction with IR/MNA to address the outer low-level concentrations.

Comment No. 17, Volume IV Section 6.0 to 6.3 – Summary and Recommendations for Site 14:
NORTHERN PLUME
Due to the elevated levels of benzene and the report indicating that "conclusive evidence does not exist demonstrating that benzene is undergoing biodegradation at the site", NDEP does not concur with IR/MNA as a stand-alone remediation for Site 14 Northern Plume.

SOUTHERN PLUME
NDEP concurs that IR/MNA is not a feasible remediation option for the Southern plume due to the results of the DCA modeling and predicted migration potential. This site will require active site remediation to address the COC's.

Comment No. 18, Volume IV Section 7.0 to 7.3 – Summary and Recommendation for Site 16:
Based on the information presented, Site 16 covers a large area with low

concentrations of hydrocarbons and isolated occurrences of low levels of solvents. NDEP concurs with the IR/MNA for this site and the Navy should proceed with the preparation of a 30-year monitoring plan. This plan must include monitoring of the isolated low-level solvent plumes.

Summary

As stated in NDEP's July 30, 2001 CGA letter and discussed in several meetings, NDEP does not concur with the Navy's POC definitions. However, based on the information presented in the report and using NDEP's POC definition of no/limited migration of the plume, NDEP concurs with IR/MNA remediation of Sites 2 and 16. The concurrence of IR/MNA is with the requirements that the Navy actively continues to remove free product from Site 2 and that a 30-year monitoring plan be developed and presented to NDEP for review and approval for each site. The 30-year monitoring plan must clearly identify "triggers" that define the plume is migrating or IR/MNA is not meeting cleanup goals. The plan must also identify active remediation methods that will be implemented within 6-months of the "trigger" event.

NDEP did not concur with IR/MNA for Sites 3 and 6 due to the volume of the source material/hotspots and the potential for this source mass to migrate. As stated in EPA's IR/MNA document, IR/MNA may be appropriate as a remedy that includes source control and mitigation of highly contaminated plume areas.

NDEP did not concur with IR/MNA for Site 1 and 14 (north and south) plumes. This is due to the elevated concentrations, slow rate of degradation (IR), potential for plume migration, inconclusive results for the first two lines of IR evidence, and failure of the third line of IR evidence. Based on the information presented in the report, these sites are required to be actively remediated.

If you have any questions or comments, please feel free to contact me at (775) 687-4670, extension 3029 or email kscarbro@govmail.state.nv.us.

Sincerely,

Ken Scarbrough
Bureau of Federal Facilities

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KS/js
cc: John Dirickson, NAS Fallon
Jim Brown, EFA Northwest, Naval Facilities Engineering Command
Bill Stephens, RAB Community Co-Chair
Karen Beckley, NDEP/BFF
Eric Noack, NDEP/BFF

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